IN THE DRAWINGS

Replacement sheets 1-5 are attached.

REMARKS

A. Summary of the Amendments

Claims 1, 22 and 32 has been amended to include the features of claim 16.

Claim 16 has been cancelled.

Claim 17 has been amended to correct its dependency.

No new matter has been added to the application by way of the present response.

B. Objection to the Drawings

On page 2 of the Office Action, the Examiner has requested corrected drawings. It is respectfully submitted that the corrected drawings in the enclosed Appendix contain the legend "Prior Art" on Figs. 1 to 7b. Thus, the Examiner is respectfully requested to withdraw the objection to the drawings.

C. Rejection of claims 1-3, 15-19, 22, 28-31 [sic], *28-34 and 37 under 35 USC 102*

On page 2 of the Office Action, the Examiner rejected claims 1-3, 15-19, 22, 28-31 [*sic*], 28-34 and 37 under 35 USC 102 (b) as being anticipated by MacCormack *et al.* US Patent 6,407,855 (hereinafter referred to as MacCormack). The Applicant respectfully traverses the rejection as set forth herein below, and submits that the claims as amended are in allowable form.

Independent claim 1 and dependent claim 16

It is recalled that the features of claim 16 have been incorporated into claim 1.

In the rejection, the Examiner contends that MacCormack teaches the features of claim 16 (*i.e.*, the gain medium being a homogeneously broadened gain medium) by referring to a passage of MacCormack (column 5, lines 20-24) that recites a "single mode fiber". With all due respect, the Examiner's characterisation of MacCormack's teachings is incorrect.

Specifically, what MacCormack teaches (in the very same passage, it might be added, as cited by the Examiner) is a Raman gain medium, which is based on a stimulated scattering effect. Scattering laser systems like those of MacCormack, which are Raman-based, have stimulated emission that is shifted by a specific amount of energy with respect to the optical pump, the shift being determined by the material of the active medium. Thus, pumps of virtually any wavelength can be used and the lasing signal is generated at wavelengths shifted by an amount specific to the used material. In summary, the pumping process characteristic of scattering-based (i.e., Raman) gain is central to McCormack, as the pump energy generates the first signal, which then acts as a pump for the second signal, which in turn acts as a pump for the third signal, and so on.

However, there is an important difference when it comes to "classical" three or four level laser systems having a homogeneously broadened gain medium. In particular, in a homogeneously broadened gain medium, the choice of the pump wavelength is *a priori* constrained by the difference in the existing energy levels. This type of gain medium, which is commonly used to make lasers (and includes silica glasses doped with erbium ions, for example), has the [unfortunate] property that it usually emits over only one narrow wavelength band, because of gain competition between the laser lines when operated in CW (continuous wave) mode. Specifically, the signal at the wavelength with the highest net gain will deplete the pump energy and will preclude other wavelengths from reaching laser oscillation.

Now, the present invention is a laser configuration that solves this problem traditionally associated with classical gain media. In particular, the inventors have made the unexpected discovery that by using a superstructure grating on a homogeneously broadened gain

medium, cross-gain saturation at room temperature between laser wavelengths can be overcome. The superstructure grating creates a distributed Fabry-Perot-like structure that causes the generation of a multi-wavelength laser signal when an energy signal is applied to the gain section. This result is different from what is traditionally achieved by use of a homogeneously broadened gain medium. Of particular relevance here, however, is that MacCormack does not suggest the use of a homogeneously broadened gain medium, and thus MacCormack is not in a position to recognize or appreciate the need to overcome the problems traditionally associated with classical gain media.

In view of the above, it is respectfully submitted that there is at least one feature of claim 1 that is not taught or suggested in the prior art and, as such, the rejection under 35 USC 102 cannot stand. Moreover, it is respectfully submitted that MacCormack's use of a fundamentally different gain medium teaches away from the present invention, thus supporting a contention of non-obviousness[1]. The Examiner is therefore respectfully requested to allow claim 1.

Independent claims 22 and 32

Claims 22 and 32, as amended, each contain language similar to that of claim 1. Thus, for the same reasons as those set forth above in support of claim 1, the Examiner is respectfully requested to allow claims 22 and 32.

Dependent claims 2, 3, 15, 17-19, 28-31, 33, 34 and 37

Each of these claims is dependent on one of claims 1, 22 and 32 and, as such, includes all of the features of the respective base claim. Thus, for the same reasons as those set forth above in support of claims 1, 22 and 32, the Examiner is respectfully requested to allow claims 2, 3, 15, 17-19, 28-31, 33, 34 and 37.

[1] Still other advantages over MacCormack flow from the use of the claimed homogeneously broadened gain medium having a superstructure grating, including, among others, a freely adjustable line spacing and desirably narrow line width.

D. Rejection of Claims 6-9, 20 and 21 Under 35 USC 103

On page 4 of the Office Action, the Examiner rejected claims 3 and 4 under USC 103(a) as being unpatentable over MacCormack *et al.* US Patent 6,407,855 (hereinafter referred to as MacCormack), in view of Morin US Patent Application 2004/0037505 (hereinafter referred to as Morin). With respect, the Applicant disagrees and submits that claims 6-9, 20 and 21 are in allowable form.

In particular, claims 6-9, 20 and 21 are dependent on claim 1 and therefore include all of the features of claim 1, including those shown above to be absent from MacCormack. It is further submitted that these features are also absent from Morin, which merely discloses a certain type of Gilles-Tournois interferometer for chromatic dispersion compensation in a passive optical fiber (*i.e.*, in a fiber without a gain medium to begin with!). As such, Morin does not remedy the shortcomings of MacCormack.

In view of the failure of the cited art to teach all of the claim limitations, it is respectfully submitted that a *prima facie* case of obviousness has not been established[2], and the Examiner is respectfully requested to withdraw the rejection of claims 6-9, 20 and 21.

[2] For the Examiner to establish a *prima facie* case of obviousness, three criteria must be considered: (1) there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine the reference teachings, (2) there must be a reasonable expectation of success, and (3) the prior art references must teach or suggest all of the claim limitations. MPEP §§ 706.02(j), 2142 (8th ed.).

CONCLUSION

The Applicants are of the view that claims 1-3, 6-9, 15, 17-19, 20-22, 28-34 and 37 are in condition for allowance. Favorable reconsideration is requested. In addition, rejoinder of the withdrawn claims is respectfully requested upon allowance of the generic claims presently in the application. Early allowance of the application as a whole, and claims 1-15 and 17-37 in particular, is therefore earnestly solicited.

If the claims of the application are not considered to be in full condition for allowance, for any reason, the Applicants respectfully request the constructive assistance and suggestions of the Examiner in drafting one or more acceptable claims pursuant to MPEP 707.07(j) or in making constructive suggestions pursuant to MPEP 706.03 so that the application can be placed in allowable condition as soon as possible and without the need for further proceedings.

Respectfully submitted,

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